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(54) Abstract Title: Personal calling line identification control for mobile

(57) A directory in a mobile phone stores a calling line identification restriction (CLIR) flag associated with each number. Each contact number or group may have a single associated identifying on/off field. The CLIR code is sent to the network when a number is called by the cellular phone, so that the caller's name or number may be selectively withheld. The CLIR code may use the GSM standard prefix #31# to suppress or hide the identity, or *31# to invoke or include the caller ID.

Figure 1.

NAME	NUMBER	CLIR
A B C D E F	1234567	ON
G H I J K L	89101112	OFF
?	?	?
?	?	?
?	?	?

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Figure 1.

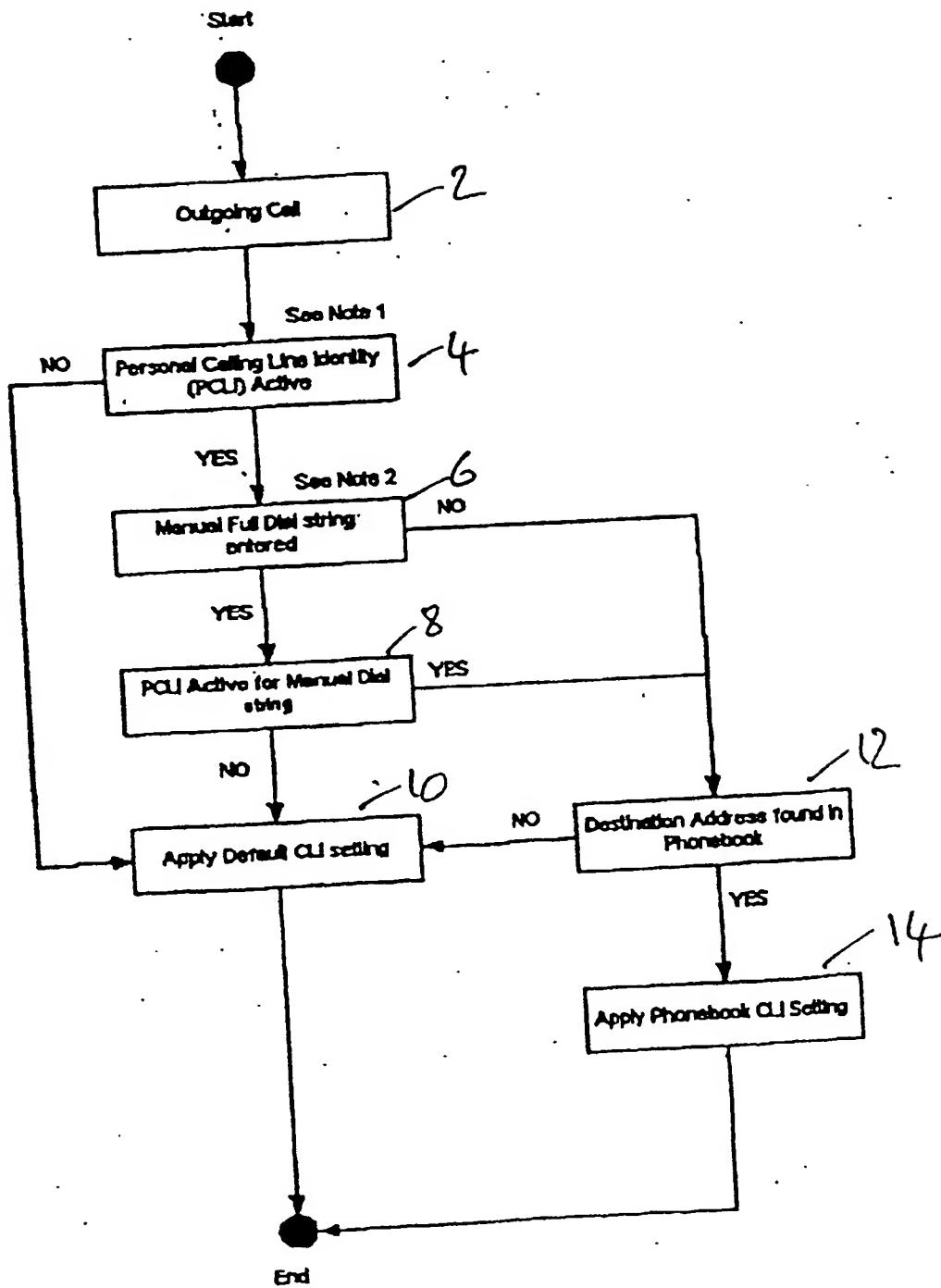
NAME	NUMBER	CIR
A B C D E F	1 2 3 4 5 6 7	ON
G H I J K L	8 9 10 11 12	OFF

Figure 2.

NAME	NUMBER	GROUP
A B C D E F	1 2 3 4 5 6	X
G H I J K L	7 8 9 10 11	Y
}	}	?

GROUP	CL 1 12
X	ON
Y	OFF
Z	OFF

Figure 3.



Mobile Communication With Personal Calling Line
Identification

5 This invention relates to Calling Line Identification
Restriction (CLIR) functionality in mobile communication
networks such as mobile telephone networks.

10 15 Known mobile telephone handsets are provided with a
user selectable option, usually called "Send Own Number"
which enables a user to select whether or not his own
telephone number will be displayed to a person whom he is
calling prior to that person determining whether or not to
take his call. This functionality of known mobile phones
uses a facility known as Calling Line Identification
Restriction (CLIR).

15 20 CLIR operates in known systems by attaching a flag to
a dialled number when that number is transmitted from a
mobile telephone to the network. This flag determines
whether or not CLIR is invoked by the network, thereby
preventing the user's number from being displayed to the
person he is calling, or not invoked by the network, which
enables the user's own number to be sent to the person he is
calling. This is referred to as enabling or suppressing
CLIR.

25 It is theoretically possible for a user to suppress or
enable CLIR on a per call basis by attaching the appropriate
prefix to the number. In GSM code this is #31# to suppress
or *31# to invoke CLIR. However, this adds to dialling time
to the user and is not generally available via FastDial or
Voice Activation, in which the facility to configure CLIR on
a per call basis cannot be provided.

Because of these constraints, users generally do not configure CLIR on a per call basis. It is either enabled and anybody phoned by the user is able to tell who is calling, or it is suppressed and all parties including ones he would prefer not to be notified of his calling identification receive a user's identification when a call is received.

It is not possible to allocate CLIR to groups of numbers stored on a mobile phone. A user has to determine whether he will suppress or enable CLIR for all numbers via the send own number facility.

Preferred embodiments of the present invention seek to overcome this drawback with known mobile phones by providing an additional CLIR attribute in a mobile phone's internal directory which may be set to indicate whether or not CLIR should be suppressed or enabled when a call is made to that number.

Preferably, an attribute may be set for a phonebook group in a phone which enables numbers in its directory to be arranged in groups.

In a further embodiment, the system may be arranged such that an explicitly dialled string automatically has CLIR suppressed or invoked.

The invention is defined with more precision in the appended claims to which reference should now be made.

A preferred embodiment of the invention will now be described in detail by way of example with reference to the accompanying drawings in which:

Figure 1 shows schematically the directory structure in a first embodiment of the invention;

Figure 2 shows the directory structure in a mobile phone in a second embodiment of the invention;

5 **Figure 3** shows a flow diagram of operation of an embodiment of the invention.

In Figure 1, the structure of the phonebook directory in a mobile phone is shown. This comprises three columns, Name, Number, and CLIR. The Name and Number columns correspond to the equivalent Name and Number columns in known mobile phones. However, the CLIR column is a new one. This is a flag set to on or off which determines whether that number when selected from the phonebook will suppress or invoke CLIR. If CLIR is set to on, then it will be invoked when a call to that number is made and the identity of the person making the call will not be made known to the receiver. When it is off, CLIR will be suppressed and a user's number will be sent to a receiver.

20 The status of the flag in the CLIR column causes the appropriate code to be transmitted to the network with the number being called. Thus, the CLIR flag actively links the table to the appropriate stored code. In GSM there are two codes, one for invoking and one for suppressing CLIR. Similar codes will be available in other known and future networks.

25 **Figure 2** shows how the directory may be structured in a phone where CLIR is attached to groups of numbers. In this, it can be seen that for each name and number entry a group is selected. This is then put to the directory where names and numbers are input by a user.

5 In a second portion of the directory, groups have CLIR flags associated with them. Thus, for each group CLIR can be selected as on or off to either invoke or suppress CLIR. Thus, when a user makes a call the phone is arranged such that it uses the group with which that number is associated to retrieve from the group and CLIR table the appropriate CLIR flag and thus to send the appropriate network code to invoke or suppress CLIR.

10 Figure 3 shows a flow diagram of the process in an embodiment of the invention for activating CLIR on a per call basis.

15 The phone is set with a default CLIR setting which can be either enabled or suppressed. When an outgoing call is made at 2, the status of personal calling line identification (PCLI) for that particular call is queried at 4. If it is active, the next step is 6 where a determination is made as to whether the outgoing call is to a manual full dial string entered by the user. If it is, a determination is made at 8 as to whether personal call line 20 identity is active for manual dial strings. If it is not, then at 10 the default CLIR setting for the phone is applied to the call.

25 At step 4, if the determination of the PCLI is not active then the call passes straight to step 10 where the default CLIR setting is applied to the call.

At 6, if the determined number called is not a manual full dial string then control passes to box 12. This step is also passed to if the determination 8 is that PCLI is active for manually dialled strings.

At 12, a determination made as to whether or not the destination address is found in the phone book memory of the handset. If it is not, then the default CLIR setting is applied at 10. If it is, then the phonebook CLIR setting is applied to the call at 14 before it is sent to the network. Thus, a determination is made as to what CLIR code should be sent to the network.

The basic implication of the system of Figure 3 is that for all outgoing calls the status of PCLI is queried. If it is inactive then no automatic rules are applied and the default settings for the phone are applied to the call.

In the case of calls which are not a full dial string, such as FastDial, and Voice Activation or phone book selection, a determination as to whether or not PCLI is active is still made. The phone can be set up to either invoke or suppress CLIR on such calls automatically.

CLAIMS

1. A method for sending a calling line identification restriction (CLIR) code with a call made from a mobile communication device in a network comprising the steps of:

- a) storing a plurality of numbers in a directory memory in the mobile communication device;
- b) storing a CLIR on/off flag with each number in the directory memory;
- c) sending a CLIR code to the network when a number from the directory memory is called by the communication device, the code being selected in dependence on the status of the CLIR flag stored with the number.

15 2. Apparatus for sending a calling line identification restriction (CLIR) code with a call made from a mobile communication device operating in a network, comprising:

- a) a directory memory in the mobile communication device for storing a plurality of numbers in a plurality of number fields;
- b) a CLIR flag storage field associated with each number field for storing a CLIR flag;
- c) means for sending a number to the network in response to a call request;
- d) means for sending a CLIR code to the network with the number in dependence on the status of the CLIR flag associated with that number.

30 3. Apparatus according to claim 2 in which each number field has a single CLIR flag storage field associate with it.

4. Apparatus according to claim 2 in which groups of number fields have a single CLIR flag associated with them.
5. A method for sending a CLIR code with a call made from a mobile communication device substantially as herein described with reference to Figure 3 of the drawings.
6. Apparatus for sending a CLIR code with a call made from a mobile communication device substantially as herein described.



INVESTOR IN PEOPLE

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Examiner: Robert Shorthouse
Date of search: 27 January 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
A	-	EP 1081971 A1	(NOKIA) See abstract
A	-	WO 99/30475 A1	(ORANGE) See abstract
A, E	-	US 2002/0041664 A1	(LATTER ET AL) See abstract

Categories:

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<input checked="" type="checkbox"/> Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
<input checked="" type="checkbox"/> & Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^V:

H4L, H4K

Worldwide search of patent documents classified in the following areas of the IPC⁷:

H04M, H04Q

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, JAPIO, INSPEC